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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,355	10/08/2002	Weng-Hsing Huang	9112-US-PA	4000

31561 7590 07/25/2003

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE  
7 FLOOR-1, NO. 100  
ROOSEVELT ROAD, SECTION 2  
TAIPEI, 100  
TAIWAN

EXAMINER

NGUYEN, THINH T

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 07/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/065,355

Applicant(s)

HUANG ET AL.

Examiner

Thinh T Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED OFFICE ACTION**

1. Claims 1-6 are presented for examination, claims 7-18 have been withdrawn by the applicant in response to the restriction requirement by the Office (paper no 3)

*Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (see MPEP paragraph 606.01).

A title such as -- MEMORY STRUCTURE WITH COMPOSITE BURIED AND RAISED BIT LINE -- is suggested.

3. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant cooperation is requested in correcting any errors of which the applicant may become aware in the specification.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b/e) that form the basis for the rejections under this section made in this office action.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1-2, 5-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Ciavatti (U.S. Patent Application Publication US 2002/0126548 A1).

#### REGARDING CLAIM 1

Ciavatti discloses a memory device structure (the abstract), comprising: a substrate; a gate oxide layer (fig 3A, Fig 3B layer 7) disposed on a portion of the substrate; a gate disposed (fig 3A, fig 3B layer 13) on the gate oxide layer; a buried bit line (fig 3C layer 9) disposed in the substrate along both sides of the gate; a raised line (fig 3C layer 18) disposed on the buried bit line; a spacer (fig 3C layer 8) disposed on both sidewalls of the gate structure, thus isolating the gate and the raised line; a word line (fig 3C, fig 3D) disposed on the gate in a direction perpendicular to the buried bit line; and an insulation layer disposed on a top of the raised line to electrically isolate the word line and the raised line.

#### REGARDING CLAIM 2

Ciavatti discloses a memory device structure (fig 3A layer 7, paragraph [5] line 4) wherein a material for forming the insulation layer comprises silicon oxide.

#### REGARDING CLAIM 5

Ciavatti discloses a memory device structure (fig 4 layer 13, paragraph [72] line 1) wherein a material for forming the word line comprises polysilicon.

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REGARDING CLAIM 6

Ciavatti discloses a memory device structure (fig 5) wherein the buried bit line is a shallow junction buried bit line.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3,4 rejected under 35 U.S.C. 103(a) as being unpatentable over Cavetti (U.S. patent Application Publication US 2002/0126548) in view of further remark.

REGARDING CLAIM 3.

Cavetti disclose all the invention except is silent about the use of silicon dioxide as gate spacer material. However, this feature is seen to be obvious in the fabrication of semiconductor memory device since many old commercial memory products have been using silicon dioxide as gate spacer material. A person of ordinary skilled in the art at the time the invention was made would know how to use silicon dioxide as gate material for the memory element without any special teachings.

#### REGARDING CLAIM 4

Cavetti disclose all the invention except is silent about the use of polysilicon as bit line material. However, this feature is seen to be obvious in the fabrication of semiconductor memory device since many old commercial memory products have been using polysilicon as gate bit line material. A person of ordinary skilled in the art at the time the invention was made would know how to use polysilicon as bit line material for the memory element without any special teachings.

8. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

9. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

#### CONCLUSION

10. The prior arts made of record and not relied upon are considered pertinent to applicant disclosure: Shinkawata (US patent 5796136) discloses a DRAM semiconductor device with composite bit line; Lee (US patent 6232181) discloses a method of forming flash memory.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose phone number is (703) 305-0421. The Examiner can normally be reached on Monday to Friday from 8.30 A.M. to 5.00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, David C. Nelms can be reached on (703) 308-4910. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Thinh T. Nguyen 

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David Nelms  
Supervisory Patent Examiner  
Technology Center 2800